



0300

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application

Inventor(s): Kreimer et al.

SC/Serial No.: 10/099,675

Confirm. No.:

Filed: March 15, 2002

Title: ENHANCING SURFACES FOR
ANALYTE DETECTION

PATENT APPLICATION

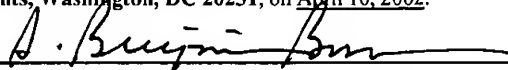
Art Unit: Unknown

Examiner: Unknown

Customer No. 23910

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence is being deposited in the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, Washington, DC 20231, on April 10, 2002.

 (Attorney Signature)
D. Benjamin Borson, Ph.D., Reg. No. 42,349
Signature Date: April 10, 2002

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.56

Commissioner for Patents
Washington, DC 20231

Sir:

It is requested that the information identified in this statement be considered by the Examiner and made of record in the above-identified application. This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56. If this is a continuation, divisional or continuation-in-part application, it is understood that the Examiner will consider all information which was considered by the Office in a parent application. MPEP §609. Such information therefore is not listed herein unless it is desired that the information be printed on a patent issuing from the subject application.

Enclosed with this statement are the following:

- ☒ Form PTO-1449. The Examiner is requested to initial the form and return it to the undersigned in accordance with M.P.E.P. §609.
- ☒ A copy of each cited document as required by 37 C.F.R. §1.98. Copies are not submitted of documents previously submitted by the applicant in a parent application from which benefit under 35 U.S.C. §120 is claimed, 37 C.F.R. §1.98(d)(1), with an information disclosure statement submitted in the parent application which complies with the Sept. 8, 2000 or subsequent revision of 37 C.F.R. §1.98(a-c). If any of the cited/submitted documents is in a foreign language, a concise explanation of relevance is provided pursuant to 37 C.F.R. §1.98(a)(3)(i). For foreign language documents cited in a search report by a foreign patent office, the requirement for a concise explanation of relevance is satisfied by the submission herewith of an English language version of the search report. MPEP

§609A(3). If a written English-language translation of a non-English language document, or portion thereof, is within the possession, custody or control of, or is readily available to any individual designated in §1.56(c), a copy of the translation accompanies this statement, 37 C.F.R. §1.98(a)(3)(ii), and satisfies the requirement for a concise explanation of relevance, MPEP §609A(3).

— **PTA Statement under 37 C.F.R. §1.704(d).** Each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in §1.56(c) more than thirty days prior to the filing of the information disclosure statement.

This statement should be considered because:

 X **37 C.F.R. §1.97(b).** This statement qualifies under 37 C.F.R. §1.97, subsection (b) because:

- (1) It is being filed within three months of the filing date of an application other than a continued prosecution application under § 1.53(d);
-- OR --
- (2) It is being filed within 3 months of entry of a national stage;
-- OR --
- (3) It is being filed before the mailing date of the first Office Action on the merits,
-- OR --
- (4) It is being filed before the mailing date of the first Office Action after the filing of a Request for Continued Examination under 37 C.F.R. §1.114.

— **37 C.F.R. §1.97(c).** Although it may not qualify under subsection (b), this statement qualifies under 37 C.F.R. §1.97, subsection (c) because:

- (1) It is being filed before the mailing date of a FINAL office action, a Notice of Allowance, or an action that otherwise closes prosecution in the subject application, whichever occurs first.

-- AND (check at least one of the following) --

- (1) It is accompanied by a STATEMENT as set forth in 37 C.F.R. §1.97(e).
-- OR --
- (2) It is accompanied by the \$180 fee set forth in 37 C.F.R. §1.17(p).

— **37 C.F.R. §1.97(d).** Although it may not qualify under subsection (b) or (c), this statement qualifies under 37 C.F.R. §1.97, subsection (d) because:

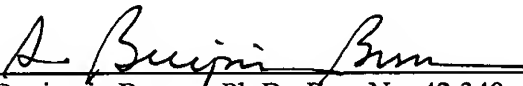
- (1) It is being filed on or before payment of the issue fee;
-- AND --
- (2) It is accompanied by a STATEMENT as set forth in 37 C.F.R. §1.97(e);
-- AND --
- (3) It is accompanied by the \$180 fee set forth in 37 C.F.R. §1.17(p).

✓ **Fee Authorization.** The Commissioner is hereby authorized to charge underpayment of any additional fees or credit any overpayment associated with this communication to Deposit Account No. 06-1325. A duplicate copy of this authorization is enclosed.

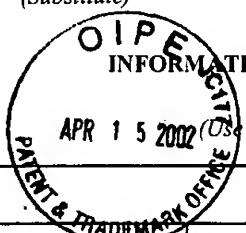
Respectfully submitted,

FLIESLER DUBB MEYER & LOVEJOY LLP

Date: April 10, 2002

By: 
D. Benjamin Borson, Ph.D., Reg. No. 42,349

FLIESLER DUBB MEYER & LOVEJOY LLP
Four Embarcadero Center, Fourth Floor
San Francisco, California 94111-4156
Telephone (415) 362-3800

Form PTO-1449 (Substitute)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		Attorney Docket Number ARBS-1010US1 SRM/DBB		Serial/Patent Number 10,099,675	
 INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use several sheets if necessary)</i>				Applicant/Patent Owner Kreimer, et al.			
				Filing/Issue Date March 15, 2002		Group Art Unit Unknown	
U.S. PATENTS							
Examiner Initial		Patent Number	Issue Date	First Named Inventor	Class	Subclass	Filing Date
		4,483,929	11/20/84	Szoka			
		4,964,457	10/23/90	Leonard, et al.			
		5,112,127	5/12/92	Carrabba et al.			
		5,194,913	3/16/93	Myrick et al.			
		5,255,067	10/19/93	Carrabba et al.			
		5,266,498	11/30/93	Tarcha et al.			
		5,306,403	4/26/94	Vo-Dinh			
		5,334,296	8/2/94	Henkins et al.			
		5,376,556	12/27/94	Tarcha et al.			
		5,391,272	2/21/95	O'Daly et al.			
		5,400,136	3/21/95	Vo-Dinh			
		5,404,218	4/4/95	Nave et al.			
		5,445,972	8/29/95	Tarcha et al.			
		5,468,644	11/21/95	Stephenson et al.			
		5,498,875	3/12/96	Obremski et al.			
		5,506,678	4/9/96	Carlsen et al.			
		5,567,628	10/22/96	Tarcha et al.			
		5,604,587	2/18/97	Che et al.			
		5,615,673	4/1/97	Berger et al.			
		5,621,522	4/15/97	Ewing et al.			
		5,630,924	5/20/97	Fuchs et al.			
		5,632,957	5/27/97	Heller et al.			



U.S. PATENTS							
Examiner Initial		Patent Number	Issue Date	First Named Inventor	Class	Subclass	Filing Date
		5,693,152	12/2/97	Carron			
		5,720,339	11/24/98	Glass			
		5,721,102	2/24/98	Vo-Dinh			
		5,783,389	7/21/98	Vo-Dinh			
		5,814,516	9/29/98	Vo-Dinh			
		5,814,565	9/29/98	Reichert et al.			
		5,836,317	11/17/98	Kunst			
		5,839,290	11/24/98	Nazeri			
		5,864,397	1/26/99	Vo-Dinh			
		5,866,430	2/2/99	Grow			
		5,891,738	4/6/99	Soini et al.			
		5,938,617	8/17/99	Vo-Dinh			
		6,025,202	2/15/00	Natan			
		6,033,546	3/7/00	Ramsey			
		6,040,906	3/21/00	Harhay			
		6,044,285	3/28/00	Chaiken et al.			
		6,064,897	5/16/00	Lindberg et al.			
		6,071,394	6/6/00	Cheng et al.			
		6,087,182	7/11/00	Jeng et al.			
		6,099,803	8/8/00	Ackley et al.			
		6,126,901	10/3/00	Patch et al.			
		6,141,095	10/31/00	Allen et al.			
		6,149,868	11/21/00	Natan et al.			
		6,181,957	1/30/01	Lambert et al.			
		6,274,385	8/14/01	Hochlowski et al.			



U.S. PATENT PUBLICATIONS				
Examiner Initial		Patent Application Publication Number	Publication Date	Applicant

PENDING U.S. PATENT APPLICATIONS					
Examiner Initial		Application Number	Filing Date	First Named Inventor	Petition to Expunge? Yes No

FOREIGN PATENT DOCUMENTS								
Examiner Initial		Document Number	Publication Date	Country	Class	Subclass	Trans- lation Yes No	
		EP 0 587 008	10.02.99	EPO				
		WO 01/06257	25.01.01	PCT				
		WO 98/50777	12.11.98	PCT				
		WO 99/44045	02.09.99	PCT				
		WO 99/44065	02/09/99	PCT				
		WO 01/15288	01.03.01	PCT				
		SU 1064-115 A	12/30/83	Soviet Union				
		JP 59-15792 A	1/26/84	Japan				
		WO 99/67623	29.12.99	PCT				



FOREIGN PATENT DOCUMENTS								
Examiner Initial	Document Number	Publication Date	Country	Class	Subclass	Translation		
						Yes	No	
	WO 99/67641	12/29/99	PCT					
	WO 01/25758 A1	4/12/01	PCT					
OTHER DOCUMENTS (Include author (if any), title, publisher and place of publication, date and pertinent pages)								
	Carrabba et al., "The Prospect of Utilizing Surface Enhanced Raman Spectroscopy (SERS) for bio- and biomedical sensing," <i>SPIE Vol. 1201 Optical Fibers in Medicine V</i> (1990), pp. 438-446.							
	Andres, R.P., et al., "Self-Assembly of a Two-Dimensional Superlattice of Molecularly Linked Metal Clusters," <i>Science</i> , Vol. 273, 20 September 1996, pp. 1690-1693.							
	Campion, A. and Kambhampati, P., "Surface-Enhanced Raman Scattering," <i>Chemical Society Reviews</i> , 1998, Volume 27, pp. 241-250.							
	Chee, M., et al., "Accessing Genetic Information with High-Density DNA Arrays," <i>Science</i> , Vol. 274, 25 October 1996, pp. 610-614.							
	Danilova, Y.E., et al., "Absorption Spectra and Photomodification of Silver Fractal Clusters," <i>Fractal Reviews in the Natural and Applied Sciences</i> , Institute of Automation and Electrometry, Russian Academy of Science, Siberian Branch, pp. 101-112.							
	Elghanian, R., et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance-Dependent Optical Properties of Gold Nanoparticles," <i>Science</i> , Vol. 277, 22 August 1997, pp. 1078-1081.							
	Gadenne, P., et al., "Giant Stokes Fields on Semicontinuous Metal Films," <i>J. Opt. Soc. Am. B/Vol. 15, No. 1</i> , January 1998, pp. 68-72.							
	Graham, D., et al., "Selective Detection of Deoxyribonucleic Acid at Ultralow Concentrations by SERRS," <i>Analytical Chemistry</i> , Vol. 69, No. 22, November 15, 1997, pp. 4703-4707.							
	Hacia, J.G., et al., "Enhanced high density oligonucleotide array-based sequence analysis using modified nucleoside triphosphates," <i>Nucleic Acids Research</i> , 1998, Vol. 26, No. 21, pp. 4975-4982.							
	Igloi, G.L., "Variability in the Stability of DNA-Peptide Nucleic Acid (PNA) Single-Base Mismatched Duplexes: Real-Time Hybridization During Affinity Electrophoresis in PNA-Containing Gels," <i>Proc. Natl. Acad. Sci USA</i> , Vol. 95, July 1998 Biochemistry, pp. 8562-8567.							
	Ingram, R.S., et al., "Poly-hetero-functionalized Alkanethiolate-Stabilized Gold Cluster Compounds," <i>J. Am. Chem. Soc.</i> , 1997, Volume 119, pp. 9175-9178.							
	Jones, J.C., et al., "Quantitative Assessment of Surface-Enhanced Resonance Raman Scattering For the Analysis of Dyes on Colloidal Silver," <i>Analytical Chemistry</i> , Vol. 71, No. 3, February 1, 1999, pp. 596-601.							
	Kim, W., et al., "Fractals in Microcavities: Giant Coupled, Multiplicative Enhancement of Optical Responses," <i>Physical Review Letters</i> , Volume 82, Number 24, 14 June 1999, pp. 4811-4814.							



EXAMINER DOCUMENTS (Include author (if any), title, publisher and place of publication, date and pertinent pages)		
		Kneipp, K., et al., "Detection and Identification of a Single DNA Base Molecule Using Surface-Enhanced Raman Scattering (SERS)," <i>Physical Review E</i> , Volume 57, Number 6, June 1998, pp. R6281 - R6284.
		Kneipp, K., et al., "Single Molecule Detection Using Surface-Enhanced Raman Scattering (SERS)," <i>Physical Review Letters</i> , Volume 78, Number 9, 3 March 1997, pp. 1667-1670.
		Kurokawa, Y., et al., "Surface-Enhanced Raman Spectroscopic Detection of CO_3^{2-} , SO_3^{2-} , and Nucleic Acid Bases Using Polyvinyl Alcohol Film Doped with Ag Fine Particles," <i>Analytical Biochemistry</i> 209, 1993, pp. 247-250.
		Lisy, V., et al., "Internal DNA Modes Below 25 cm^{-1} : A Resonance Raman Spectroscopy Observation," <i>Journal of Biomolecular Structure & Dynamics</i> , ISSN 0739-1102, Volume 14, Issue Number 4, 1997, pp. 517-523.
		Michael, K.L., et al., "Randomly Ordered Addressable High-Density Optical Sensor Arrays," <i>Analytical Chemistry</i> , Vol. 70, No. 7, April 1, 1998, pp. 1242-1248.
		Mucic, R.C., et al., "DNA-Directed Synthesis of Binary Nanoparticle Network Materials," <i>J. Am. Chem. Soc.</i> , 1998; Volume 120, pp. 12674-12675.
		Nie, S. et al., "Probing Single Molecules and Single Nanoparticles by Surface-Enhanced Raman Scattering," <i>Science</i> , Volume 275, 21 February 1997, pp. 1102-1106.
		Owen, J.F., et al, "Enhancement of Fluorescence Induced by Microstructure Resonances of a Dielectric Fiber," <i>Physical Review Letters</i> , Volume 47, Number 15, October 12, 1981, pp 1075-1078.
		Peterlinz, K.A., et al., "Observation of Hybridization and Dehybridization of Thiol-Tethered DNA Using Two-Color Surface Plasmon Resonance Spectroscopy," <i>J. Am. Chem. Soc.</i> , Vol. 119, No. 14, 1997, pp. 3401-3402.
		Plekhanov, A.I., et al., "Production and Spectroscopic Study of Silver Fractal Clusters by Laser Vaporization of Target," <i>Opt. Spectrosc. (USSR)</i> 71 (5), November 1991, pp. 451-454.
		Ratilainen, T., et al., "Hybridization of Peptide Nucleic Acid," <i>Biochemistry</i> 1998, 37, pp. 12331-12342.
		Safonov, V.P., et al., "Spectral Dependence of Selective Photomodification in Fractal Aggregates of Colloidal Particles," <i>Physical Review Letters</i> , Volume 80, Number 5, 2 February 1998, pp. 1102-1105.
		Weitz, D.A., et al., "Colloidal Aggregation Revisited: New Insights Based on Fractal Structure and Surface-Enhanced Raman Scattering," <i>Surface Science</i> , Volume 158, 1985, pp. 147-164.
		Xiao, T., et al., "Hunting for the Active Sites of Surface-Enhanced Raman Scattering: A New Strategy Based on Single Silver Particles," <i>Physical Review Letters</i> , Volume 78, Number 9, 3 March 1997, pp. 632-638.
		Shalaev, V.M., "Nonlinear Optics of Random Media: Fractal Composites and Metal-Dielectric Films," <i>Springer Tracts in Modern Physics</i> , pp. 101-147.
		Zou, S., et al., "Surface-Enhanced Raman Scattering of Ultrathin Cadmium Chalcogenide Films on Gold Formed by Electrochemical Atomic-Layer Epitaxy: Thickness-Dependent Phonon Characteristics," <i>J. Phys. Chem. B</i> 1999, 103, pp. 2323 - 2326.

Examiner

Date Considered

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

*1 = Copy not submitted because it was submitted in prior application SN / , filed , 20 , relied on under 35 USC §120.

*2 = Copy not submitted because it was submitted in prior application SN / , filed , 20 , relied on under 35 USC §120.